ASSEMBLY, USE AND MAINTENANCE MANUAL

INTEGRATED VACUUM UNIT

VACU 2

CE

INSTRUCTION MANUAL

- Type: feeding system for solid fuel boilers
- Revision 1.0.0

INTEGRATED VACUUM UNIT

INDEX

1 INTRODUCTION

Dear customer,
the manufacturer would firstly like to thank you for the choice you made in buying an product, whose technical features will certainly meet Your needs.
Our products have been designed and manufactured in total compliance with the current regulations, by choosing the best materials to obtain durability and ease of use of the product.
We ask you, therefore, to read this manual carefully and completely, following strictly the instructions contained herein.

1.1 Use of this manual

The instruction manual is a document drawn up by the manufacturer and is part of the product: it integrates the specific rules of application and general rules for people, animals and objects safety. In the event that the product is resold, handed over, rented or sold to others, it must always be accompanied by this manual; therefore, it is recommended to use and keep it with care for the entire operative life of the product.
The main objective of this manual is to make known the proper and safe way to use the equipment.

The manufacturer reserves the right to make improvements or modifications to this manual and to the equipment at any time, without obligation to advise third parties.

2 WARNINGS

- Do not use the machine for any improper use.
- Do not let children near the machine.
- This unit must not be used by people (including children) with reduced physical, sensory or mental capabilities, or with lack of experience and knowledge, unless they are supervised or instructed in the use of the unit by a person responsible for their safety.
- Use only original spare parts.
- Do not cover motor cooling ventilation inlets.
- Do not put parts of the body into contact with the machine before having removed the electrical power.
- Disconnect the power supply when a long period of inactivity is expected.

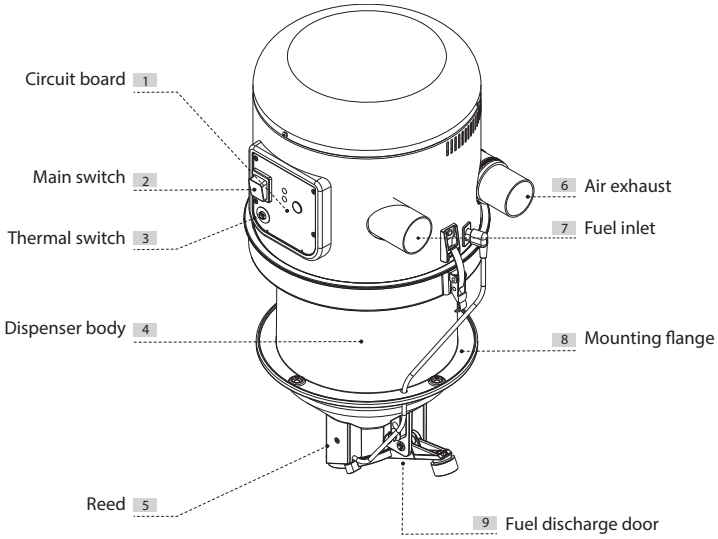
The manufacturer declines any liability or guarantee, if the buyer or anyone makes changes or even minor modifications to the purchased product.

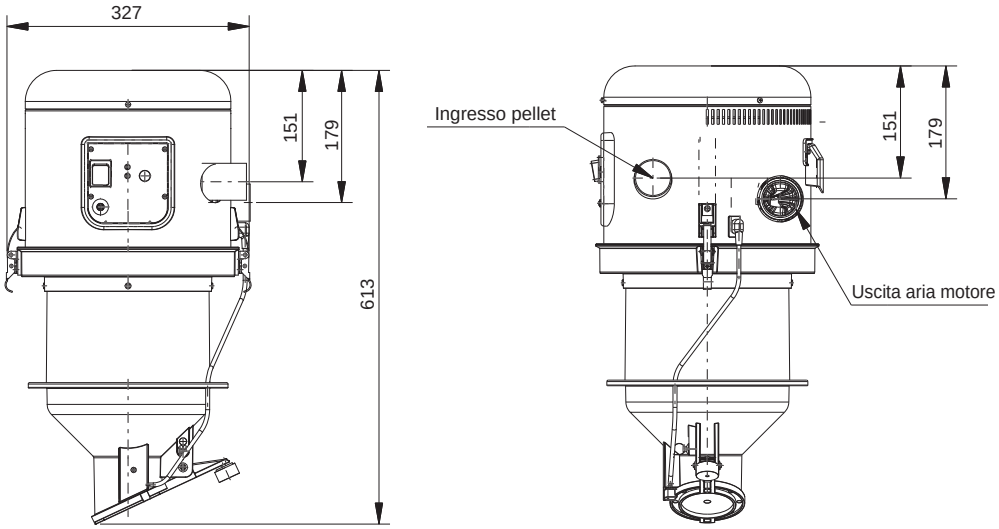
3 TECHNICAL DATA, EXPLODED VIEW DRAWINGS AND DIMENSIONS

English

Model		VACU 2
Article		**HP-RL-NOVA**
Fuel inlet	Ø mm	50 M
Discharge pipe	Ø mm	50 M
IP protection degree	IP	20
Operating temperature min/max	°C	0 ÷ 40
Degree of humidity min/max	%	30 ÷ 95
Power supply	V ac	230
Frequency	Hz	50/60
Motor power	kW	1,35
Absorption	A	5,8
Thermal switch	A	8
AUX output max nominal load		1A 240 V ac
Insulation class		1
Maximum air flow	m^3/h	213
Dispenser MAX capacity	l	5,2
Weight	kg	8,4
Noise level	dB(A)	< 70

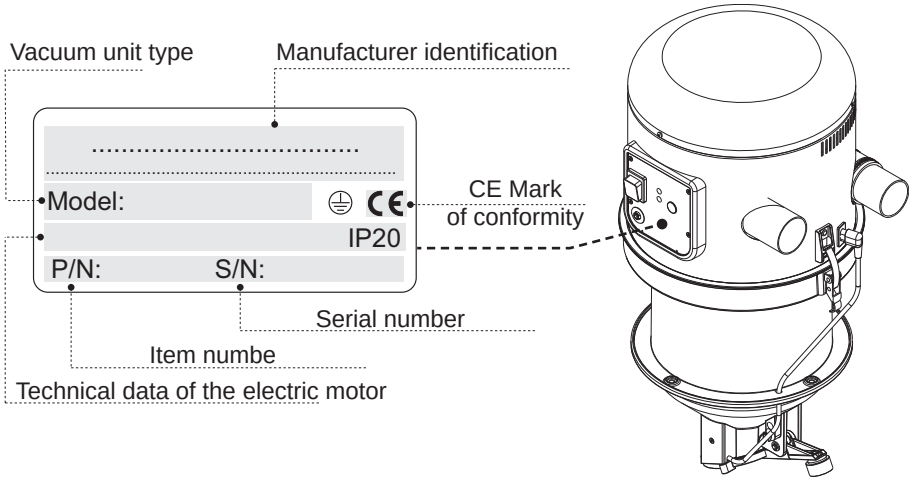
N. B: Nominal noise levels. The values may vary depending on the environment in which the system is installed and the type of positioning.





3.1 Identification plate

The CE identification plate is located to the piping network attachment side. Do not remove or damage the label.



3.2 Safety symbols

DANGER OF VOLTAGE OR ELECTRICAL CURRENT
Danger of serious personal injuries.
During maintenance operations, always disconnect the power supply and make sure that it cannot be restored.

DANGER OF CUTTING
Danger of serious personal injuries.
During maintenance operations, always disconnect the power supply and make sure that it cannot be restored.

DANGER OF AUTOMATIC STARTING
Danger of serious personal injuries.
During maintenance operations, always disconnect the power supply and make sure that it cannot be restored.

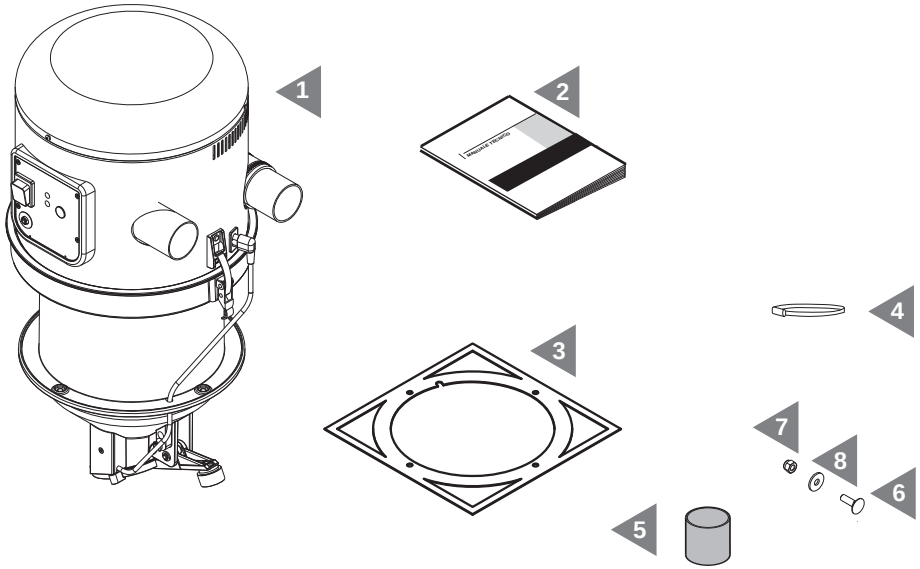
DANGER FOR THE HAND WHEN THE SCREW CONVEYOR IS IN OPERATION
DANGER OF SERIOUS PERSONAL INJURIES.
During maintenance operations, always disconnect the power supply and make sure that it cannot be restored.

It is recommended to pay full attention to pictograms and warnings of danger and prohibition in the present different parts of the equipment: if not respected, hazardous situations may occur.

4 PACKAGING CONTENT

The sales package of the integrated vacuum unit includes the following details:

1) N°1 integrated vacuum unit
2) N°1 installation, use and maintenance manual
3) N°1 drilling template
4) N°4 fascette stringi tubo
5) N°2 gum sleeves
6) N°4 M5 screw
7) N°4 self-locking nuts M5
8) N°4 washers



Check that the vacuum unit, the installation kit and the accessories correspond to those ordered and that no transportation damage is evident.
Should this not be the case, please contact immediately the seller.

5 PROPER USE OF THE PRODUCT

The vacuum unit has been designed to be installed for the pneumatic transport of pellets or other biomass fuels with a medium-fine size;
it can move a large amount of air into the pipes connected, allowing the solid fuel to be transported together with the air.
This product is suitable for working with biomass fuel such as pellets, olive pomace, crushed shells of dried fruit, corn, but it cannot work with fuels having a very fine size, or having excessive dimensions and, in any case, having lengths over 40 mm or diameter greater than 15 mm.

It is recommended to use only ENplus A1 certified pellet.

The vacuum unit must be installed above the boiler tank.
It is equipped with a panel for the regulation and the control of all the system functions of the fuel pneumatic transport: this panel can be controlled directly from the boiler, if the manufacturer has provided it (see boiler use manual).
The vacuum unit moves the fuel from the main storage tank to the boiler tank on which it has been installed continuously and automatically; it is already equipped with a dispenser and all the systems for the adjustment and the operation safety.
The product is suitable to serve boilers with a maximum power of 100 Kw/h and with a fuel consumption lower than 25 kg/h.

6 INSTALLATION

It is the installer's responsibility to verify the presence of any risk of danger in the installation area and to determine the suitability in accordance with both the applicable laws and the product characteristics described in this manual.
The installer must also comply with the requirements of this manual as well as inform the user of the operation and maintenance of the installed products and report any dangers related to their use.
It is necessary to leave a free space of adequate size all around the product, in order to permit any repair, maintenance or inspection operation.
The product should not be exposed to atmospheric agents and should not be installed in areas subject to high humidity, possible flooding, high temperatures and dust presence.

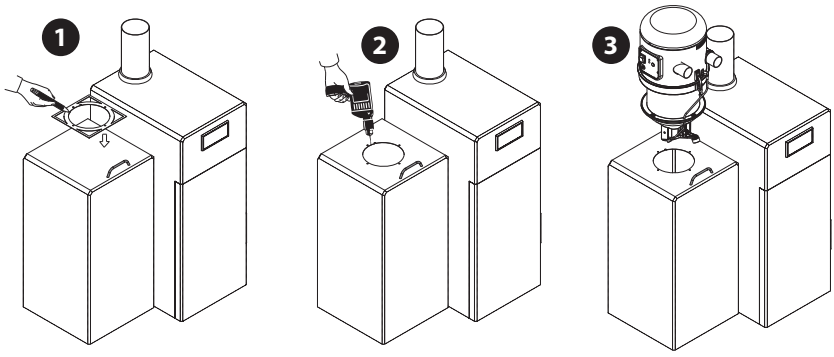
6.1 INSTRUCTIONS FOR INSTALLING THE SYSTEMS

Consider that in pneumatic fuel transport systems there are two different types of pipe features:
- sections of pipes where only air and eventually dust pass through
B- sections of pipes where both air and fuel pass through
Mandatory all sections of piping through which the fuel passes must be made with PU or steel pipe and they must be connected to be antistatic.
We remind you that the lengths of the various pipe sections described in our manuals and catalogs are purely indicative: when we speak of “available length” we mean the total development of the various sections.
It is always advisable to make mainly straight and horizontal piping sections and, in any case, with the least number of changes of direction and vertical paths.
For all the sections where fuel passes, it is recommended to follow these simple rules:
the maximum length allowed for the various sections of piping depends on the components chosen for your system:
1 - the characteristics and technical data provided for each component must always be evaluated in advance, so that the system works at its best and has the required characteristics.
2 - in two-pipe systems (fuel suction and air return to the silo) the limits on the lengths are generally much lower and never exceed 10 meters. With some products pipe lenght cannot be more than 3 meters.
3 - in single-pipe systems, the maximum length allowed for the various sections of pipe, despite being limited by the components chosen for your system, is more generous, but even in these cases it is necessary to evaluate in advance the characteristics and technical data provided for each component installed.
4 - paths with many curves or with very close curves should always be avoided.
5 - the minimum radius of the curves must be equal to or greater than 0.5 meters.
6 - sections of pipes that include both positive and negative siphons must be avoided.
7 - the sections of horizontal pipes must be kept perfectly leveled.
8 - vertical pipe sections longer than 3.5 meters must always be avoided and at the bases of these the minimum radius of the bends must be equal to or greater than 1 meter
9 - the sections of piping where fuel passes must be well fixed at least every 1.5 meters.
It is recommended to use only pipes, fittings and accessories present in our catalog, as they have been designed, tested and built specifically for these systems.
Before installation and start-up of the system, it is essential to carefully read the instructions supplied with the various components and in case of doubts it is advisable to contact specialized personnel.
The realization of the systems and the installation of the components must always meet the safety standards corresponding to the type of rooms in which they are positioned.

6.2 Positioning

To fix the vacuum unit on the boiler tank follow these cautions:
a) it must be firmly fixed and leveled above the tank loading mouth
b) it does not hinder any manual filling of the tank
c) the dispenser discharge outlet must be inside the tank or at least at the level of the boiler tank lid
d) the dispenser discharge outlet should possibly be located in the center of the tank
e) the dispenser discharge flap must be free to move completely and does not hit anything during its movement.

To facilitate these operations, the vacuum unit is supplied with a template for preparing the holes.
See figures 1 to 3.
Where it is not possible to place the dispenser discharge outlet inside the tank, a maximum level sensor must be installed in the tank, connecting it to the panel which controls the system, to prevent fuel leaks during the loading cycles..



6.3 Warning for installations on controlled pressure tanks

It is important to remind that pneumatic transport systems work modifying the state of pressures in the different components of the installation itself: in particular, during the functioning of our systems, the negative pressure inside the dispenser ranges from 0,080 to 0,24 bar (-1,16 to -3,48 psi).
Note: when the system is starting, an air suction from the pellet discharge flap placed on the bottom of the dispenser may occur.
Afterwards, the same may happen during the dispenser filling phase, due to small wood particles snagged between the fuel outlet and the lower closing flap, which impede the perfect sealing. These leakages don't prejudice the system operation, but they could change the negative pressure inside the boiler tank, with a risk for boiler safety.
Is it possible to fix the situation mainly by programming the working time of the fuel transfer system only when:
A) The brazier of the boiler is switched off and cold
B) The loading door of the tank is open
C) The communication channel between the fuel tank and the boiler brazier is completely closed
D) The smoke extraction fan of boiler is working at the max power;
E) On the boiler tank is present an electrical valve, with proper dimensions, connected to the fuel feeding transport system, which allows an easy compensation of the air suck

6.4 Connection to the piping network

Both the ø 50 mm pipes of the vacuum unit must be connected with at least one piece of antistatic flexible hose with equal diameter, secured with well-fixed hose clamps.
The other end of the antistatic pipe should be connected to the rest of the fuel transport system, which can still be made with flexible antistatic pipe or steel pipes, also present in the catalogue.
To avoid static currents, the copper strand in the antistatic pipe must always be in contact with a grounding or other steel pipes belonging to the fuel transport system.
The OUT pipe exhausts dusty air from the central vacuum unit, while the IN pipe transports the fuel to the unit dispenser.
The air exhaust pipe can be connected with a fuel extraction accessory where provided; otherwise, it should be connected to the dust collectors present in the catalogue. The maximum allowed gross length between the fuel withdrawal point and the central vacuum unit is 25 m.
The following elements affect the calculation of the net length of the pipe:
- the type of fuel to be conveyed
- the number of curves inserted in the section where the fuel passes
- the length of the vertical paths inserted in the section where the fuel passes

The maximum allowed length of the exhaust pipe (expulsion) of the air exiting the central unit is 5 m (single-pipe system)

The maximum allowed length of the air expulsion pipe exiting the central unit, if it returns to the fuel withdrawal point, is 10 m (double pipe system)

See “system technical data” on our website

6.5 Electrical Connection

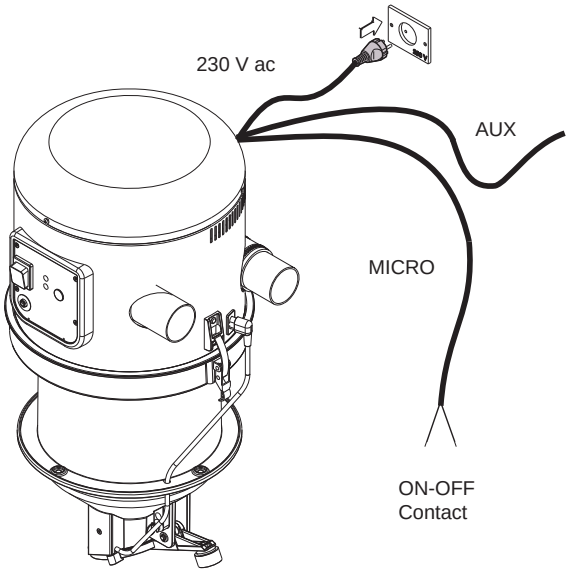
Before making the electrical connection, check that the supply voltage corresponds to the one required and that the electrical system to which the product is connected is done in compliance with current regulations.
Connect the two wires of the activation line called **AUX** to the motorized extraction system (if present).
Check that the two operation consent wires, labeledi **MICRO**, are connected together.
Alternatively, the two wires called **MICRO**, can be connected
- to the control system of the boiler if the latter is predisposed for this.
- to a timer in order to program the operating times
- to a remote automatic activation system
- to a level sensor (see our catalog)

Connect the power cable to a 230 V ac power outlet.

Electric cabling legend:

Connection	Function	Control
MICRO	On-off control	Input: - Timer - Sensor - Boiler control
AUX	Normally open contact - max 1 A	Output: - fuel extraction system activation

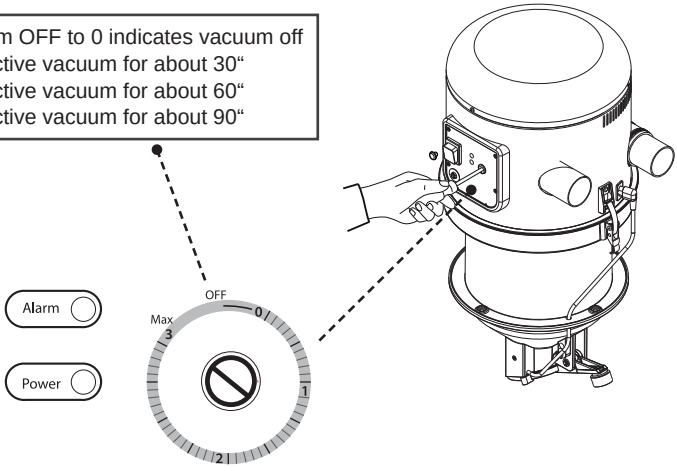
Example of electrical connections



7 START UP AND USE

Before proceeding to unit start up, it is opportune to check that the pipes are correctly and firmly fixed to it, and that electrical connections comply with the current law, as well as the electric system to which it is connected.
Prepare an empty run to verify the functionality and then, before filling with fuel the storage tank, check that there are no foreign bodies inside it.
Read all the manuals of the different components of the system before proceeding.
Remove the timer protective cap and turn the potentiometer anti-clockwise with a screwdriver, positioning it on OFF mode.
Place the main switch over the control panel to 1.
The green “POWER” led on the control panel lights up.
Turn the potentiometer slightly clockwise and wait for the central unit to begin operations and complete a brief operating cycle.
Adjust the potentiometer at this point, so that the operation time of the central unit is sufficient to fill the transparent dispenser with fuel till the level indicated by the “MAX LEVEL” adhesive label.
After a few successful operating cycles, refit the protective cap.
In the case of fillings at a lower level there can be no consequences, but fillings far superior to the optimum level could cause defects and noise in vacuum unit functioning and occlusions in fuel transport pipes.
It is therefore advisable to adjust the operating times properly, taking care to check them at least at each refilling of the fuel storage tank.

The potentiometer from OFF to 0 indicates vacuum off
Position 1 indicates active vacuum for about 30“
Position 2 indicates active vacuum for about 60“
Position 3 indicates active vacuum for about 90“



Now the vacuum unit is operational: an additional potentiometer adjustment may be necessary if you change, even a little bit, the specific weight or type of the fuel which has to be transported. In these cases, it is sufficient to readjust the operating time of the vacuum unit so that it is appropriate to fill the transparent fuel dispenser, at each cycle, to the level indicated by the “MAX LEVEL” adhesive.
If the unit will remain inoperative for a long time, place the light switch on 0 and remove the power supply.

7.1 Alarm light

The control panel of vacuum unit has a red led called “ALARM”: in the case it is illuminated, the unit and consequently the fuel transport system stop. This blockage may be due to various causes. The most frequent are:

A - Lack of fuel in the storage tank.

B - A blockage in the fuel transport pipe does not allow the fuel flow in the dispenser.

C - The fuel inlet pipe is not airtight, so the air suction does not allow the fuel flow into the dispenser.

D - The fuel discharge door of the dispenser does not close tightly, so there is an air suction which does not allow the correct flow of the fuel in the dispenser.

In all these cases, after the vacuum unit has run three cycles without fuel suction, the failure red led will turn on and the vacuum unit will no longer operate until manual reset.
Manual reset to eliminate the alarm should be done after solving the problem that produced the block: the necessary operation is made by turning the illuminated switch 0-1 off and, after 10 seconds, turning it newly on.

7.2 Thermal switch

The thermal switch’s task is to protect the electrical and electronic parts of the vacuum cleaning unit from overcurrents and short circuits.
The button of the switch during correct operation will be positioned inside its own seat, while in the event of a successful protection the button will be released from its seat.
The reset must be done manually by pressing the button, this operation will be effective only if the cause of the block has been solved.
If blocking occurs repeatedly, the intervention of a specialized technician is necessary.

8 MAINTENANCE AND END-OF-LIFE

Before carrying out any maintenance operation, it is obligatory to disconnect the power supply cable from the main socket and to aerate the premises in which it is installed for at least 15 minutes. Complex or long maintenance operations must be done out of fuel storage and heating unit premises.
Any maintenance and repair operation must be carried out by experienced personnel and authorized by the manufacturer.
In the absence of a specific maintenance plan, a complete product inspection is recommended for each filling of the fuel storage tank.
The checks to be carried out at least monthly are:
- Check the electrical wiring condition
- Verify the motor brushes condition
- Eliminate dust traces from the mesh filter located inside the dispenser
- Clean the rubber interior part of the fuel discharge door

It is also advisable to thoroughly clean the fuel storage tank at least annually, in order to avoid dust accumulation and presence of foreign bodies.

8.1 Spare parts
To guarantee longevity and optimum performance of the vacuum unit, it is recommended to use only original spare parts.

8.2 End-of-life
The disposal of packaging, accessories and machine must be executed in accordance with applicable laws, ensuring the recycling of any of the core components.

9 SAFETY REQUIREMENTS FOR FUEL STORAGE TANKS

SAFETY REQUIREMENTS for pellet storage tanks with capacity up to 10 t

Keep the doors closed. Access is permitted only to authorized personnel under the supervision of a person outside

Do not smoke and approach flames or other sources of ignition.

Danger of death due to high concentrations of carbon monoxide (CO) and lack of oxygen.

In the 4 weeks after the fuel filling, enter only with a CO detector.

Aerate the storage room for at least 15 minutes before entering and keep the door open during your permanence.

Ensure an adequate and permanent aeration of the storage room through vent covers, openings or fans.

Wounding risk for moving systems

Turn off the boiler at least one hour before the pellet is delivered.

Proceed to the filling according to the requirements of the boiler manufacturer and the pellet supplier.

Protect pellets from humidity

In case of fire suspect keep the front door and any other opening of the storage room close and call the firemen.

10 WARRANTY

PRODUCT LIMITED WARRANTY CONDITIONS

The Manufacturer guarantees to the original purchaser the absence of defects in material and workmanship of the product for the period stated, from the date of purchase. Except as prohibited by applicable law, this warranty is non transferable and it is limited to the original purchaser. The present warranty gives the buyer specific legal rights and the possibility to claim rights which can vary under local laws.

Read all warnings and instructions before using the product purchased.

The entire liability of the manufacturer and your exclusive remedy for any breach of warranty will be at the discretion of the Manufacturer:
(1) To repair or replace the product, or (2) refund the purchase price, provided that the product has been returned to the point of purchase, or such other place as may be specified by the manufacturer, with a copy of the sales receipt or detailed and dated receipt. The shipping and handling are not free of charge, except in cases where this is prohibited by applicable law.
To repair and replace the product, the manufacturer may, at their own discretion, use new, refurbished or used parts in good working condition. Any replacement product will be warranted for the remaining time of the original warranty period, or for any period of time that complies with the provisions of the current law.

This warranty does not cover problems or damage resulting from (1) accident, abuse, misapplication, repair, alteration or unauthorized disassembly; (2) maintenance operation, use which is not in accordance with the product instructions or connection to an improper voltage supply; or (3) use of consumables and spare parts which are not supplied by the manufacturer or authorized service center.

Valid warranty claims are generally processed through the point of purchase of the product. Please agree this detail with the retailer where you purchased the product.
The Warranty claims that cannot be processed through the point of purchase, as well as any other product related questions, should be addressed directly to the manufacturer. Addresses and contact information for customer support can be found at the web.

Except as stated by relevant laws in force, any implied warranty or condition of merchantability or suitability for a particular purpose relating to this product is limited to the duration of the Limited Warranty period for the specific product purchased.

Some jurisdictions do not allow limitations on the duration of implied warranties or the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights and you may have other rights that vary from state to state, or from jurisdiction to jurisdiction.
Consumers have legal rights under applicable national legislation governing the sale of consumer products. Such rights are not affected by the warranties in this Limited Warranty.

No dealer, agent, or employee of the manufacturer is authorized to make any modification, extension or addition to this warranty.

11 CERTIFICATION

English

Declaration of absence of harmful substances

The manufacturer declares that their products and equipment are made with materials compliant with the current regulations regarding protection of health and the environment and does not contain substances classified as SVHC (Substance of Very High Concern) in accordance with Regulation EC 1907/2006 (REACH, or registration, evaluation, authorization and restriction of chemical substances).

Although in the working cycles of raw materials and our products such substances are not used, their presence in the size of p.p.m. (parts per million) cannot be excluded due to micropollution of raw materials.

EC declaration of conformity

The Manufacturer declares that its products and equipment comply with the following standards:

EN ISO 12100:2010(Risk Assessment Calculator)
EN ISO 14121-1 (Safety of machinery)

And following directives:

N° 2006-42-CE
N° 2014/35/UE (LVD)
N° 2014/30/UE (EMC)

INTEGRATED VACUUM UNIT VACU 2

F0920507.08

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